Industrial Finishing

Reg. U. S. Pat. Off.

An Independent Publication Devoted to the Finishing of Industrial Products

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Letters

Who Makes "Rustripel?"

One of our members is inquiring regarding a paint or enamel put out under the trade name RUSTRIPEL. Do you have a record of this product? —N. A. P. A.

Auto Finishing; Polishing

We are looking up various systems of finishing automobiles such as polishing systems, simonizing by power, etc., paints and spray guns of the very latest design and labor saving possibilities—in fact all pertaining to the best utility in our line.—A. A. L. Co.

Portable Electric Rubber?

Where can I buy a small portable, electric, universal motor rubbing machine to rub furniture with felt and powdered pumice stone? I have investigated compressed air rubbing machines, but I have rubbing jobs only occasionally and do not care to install compressed air equipment. —H. F.

Frying Pan Lacquer

In your magazine I read some time ago of a special clear lacquer which could be used on frying pans, so as to avoid tarnishing or corrosion, and which could be taken off from the pan by simply dipping the kitchen utensil in boiling water.

Will you kindly give me the name of the manufacturer of such lacquer?

I am sending you a few copies of my monthly publication "Policromia," dealing on tropical paint problems. Please let me know whether it will be agreeable to you that whenever I find something of interest to the Latin-American painters, I should translate it and have it published, stating that it has been reproduced from INDUSTRIAL FINISHING?—L. G. G., Mexico City.

Synthetic Enamels

You may be interested in learning that I have received a number of requests for further information on synthetic enamels and synthetic

(Continued on page 6)

From the Editor's Desk

A TEACHER OF ECONOMICS recently counseled a group of business men to put their competition on a service basis instead of a price basis. This would prove helpful in getting away from price arguments and wrangles which have been the chief bone of contention in industry and business for generations. But it is not a full and complete answer to the question of how to compete in business without serious trouble. The service idea itself, if carried very far, may become indirectly an instrument of price cutting. Any service for which others make either a direct or indirect charge, and which really adds to the cost of doing business, if given free, amounts to practically the same thing as making a price concession. Prices should be stabilized on a fair and equitable basis.

An excellent thought to develop is that of enterprise. Compete with enterprise—which, as a term, is broad enough to include this service feature and several other items. What is in mind here is enterprise that investigates and cultivates new prospect fields and things of that kind—making surveys and investigations in the surrounding territory to find new outlets and prospects that will enlarge the market and not make necessary so much striving for what trade is already in evidence.

Another angle of this suggestion of enterprise is that of making a careful study of customer needs so that you may cater to them properly, and in that way furnish a better measure of satisfaction. The satisfied customer will not only stay with you, but he is about the best advertisement you can have to help extend your business. In short, active enterprise in acquiring more knowledge and getting a grasp on and developing new ideas that will fit in and help out, opens the road to what may be termed the best way to compete with others.

W. R. Rohr

Managing Editor

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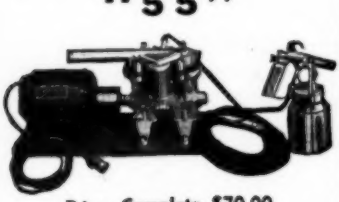

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(Continued from page 4)

resins. I have found that the most popular synthetic resins in use in the manufacture of synthetic enamels are the glyptal type, the phenol-formaldehyde type, and the rezyl type. The glyptal and the rezyl types are used to a large extent in the formulation of baking synthetics, while the phenol-formaldehyde types are used more extensively in the air-drying type of enamel.

The most important feature, of course, in using synthetic resin in enamel formulation is that the resin itself can be controlled in manufacture, thereby assuring the manufacturer of more satisfactory results and less chance of the finished enamel not being up to standard in every respect.—Paul Bloom.

Dip Finishing Block Letters

We would like to get in touch with someone familiar with dipping paint and equipment. We manufacture all sizes of cut-out wood letters, and are planning on installing dipping machinery which will enable us to finish large quantities of these letters. It is necessary that these letters have a good finish on all surfaces. We are sending several cut-outs for your examination.—G. D. & E.

Tumbled Sealing Primer

On page 56 of your May issue there is an article signed by A. B. Laboratories, in which reference is made to a sealing primer for tumbling on wood parts.

We should like to get the name and address of the manufacturer of this material, or if you know who it is, we would appreciate your placing this letter in their hands, so they can send us full information and prices.—W. E. K. Co.

Portable Paint Spraying

We would like to know if you can give us any information about the use of portable spraying machines for painting the interiors of homes, and especially rooms in apartments.

If you have any knowledge of this method being used before, or whether it would conflict with fire or health laws, and the size of a machine to do satisfactory work—anything you can pass along to us would be greatly appreciated.—P. S. B. W.

Beauty Preparation Jars

You may possibly be able to help me out in some suggestion for a fin-

(Continued on page 36)

Do you follow through to a good finish?

In work or play the follow-through to a good finish is important. Take golf for instance; hitting the ball hard without a good finish accomplishes only poor or mediocre results. It's the same in manufacturing a product; good materials and good construction without a good finish accomplish only fair results.

It's the finish that gets the extra distance down the fairway — and it's the finish that gets the extra volume of sales for your product.

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Lower Costs; Good Wages — *in the Finishing Room*

by C. F. SCRIBNER
Industrial Engineer

Modern methods used in finishing cabinets where quantity production is the rule, will be of interest to readers of *Industrial Finishing*. When such methods bring about lower costs of product, at the same time resulting in higher earnings to the employes, interest in them will be considerably increased.

THE PRACTICE described in this short article is employed by a middle western plant and has been found productive of surprising results, both as to the volume of work produced and the finishing cost per unit of the product.

First, studies were made over a considerable period to determine the average coverage of the various finishing materials. This was necessary in order to properly plan purchasing requirements and to insure that an adequate supply of such materials would be on hand when required, without any possibility of production being delayed because materials had not been received. These studies resulted in the following standard coverage figures for the materials used:

Finishes	Sq.ft. per gal.
For first coater	890
For second coater	730
For stain	370
For varnish	680

As an example, take a mahogany finish, known in this plant as No. 570. A comparison of the sequence of operations before studies were made to standardize the method, with the standard sequence which resulted from these studies, is shown in Fig. 1.

Old Method	New Method
1. Brush stain	1. Dip stain
2. Shellac, 1st coat	2. Sand lightly
3. Sand shellac coat	3. Fill
4. Fill	4. Wipe filler
5. Wipe filler	5. Shellac
6. Shellac, 2nd coat	6. Sand
7. Sand shellac coat	7. Varnish, 1st coat
8. Varnish, 1st coat	8. Sand varnish
9. Sand varnish	9. Varnish, 2nd coat
10. Varnish, 2nd coat	10. Rub
11. Rub	11. Polish
12. Polish	

Fig. 1—Sequence of Operations

Here it is noted that the former method of applying stain was with a brush and this method was changed to dip staining. Also, one coat of shellac has been omitted, together with the expensive hand sanding which followed this element. In the older method it will be noted that a coat of filler was applied under the final shellac coat, which was found to be a cause of considerable trouble and expense in the finished product. Finally, from extensive tests made, it was determined that a single coat of shellac was sufficient—when of proper consistency, and rightly applied.

Before introducing the new methods, cabinets were brought into the finishing room and squads

were assigned to the various operations on a particular lot, the cabinets being moved around to the various working positions. Moving these cabinets across the floor resulted in frequent and expensive breakage and damage and tended to slow up production, as well as to interfere with the output schedules.

With the application of changed methods, a slow-moving conveyor was installed, whereby the cabinets were placed on this conveyor after the dip-staining operation, and each operation up to and including the first varnishing was performed before they were removed. After application of the first varnish coat, cabinets were removed from the conveyor and allowed to dry, following which the remaining operations were performed in proper sequence.

Finishing Operations on cabinets	Time per 100 Units in Hours Old	New
1. Stain	5.84	2.30
2. Sand	0.00	7.45
3. Shellac	3.34	0.00
4. Sand	9.20	0.00
5. Fill	13.00	9.62
6. Wipe filler	11.80	9.32
7. Shellac	3.34	2.60
8. Sand	9.20	7.10
9. Varnish, 1st	37.00	23.00
10. Sand	9.50	7.40
11. Varnish, 2nd	35.20	21.80
12. Rub	25.00	17.00
13. Polish	18.40	11.96
Totals	179.82	119.55
Savings		34.4%

Fig. 2—Comparison of finishing coats

Interesting as were the results secured from this change of method, in the speeding up of production and the elimination of breakage and damage, as well as in the substantial reduction in cost which was brought about, perhaps the point of major importance is that employes earnings were increased on an average 21% over their former earnings. A comparison of costs under the old and new methods is shown in Fig. 2.

Chinese Blue

Chinese blue is a very strong color although quite transparent. If used without mixing with other colors it is almost black, therefore, it is seldom used alone as a finishing color.

It has a green undertone that is not discernible in the pigment itself but can be seen if a small amount of the material is smeared on a glass plate and held up to the light—a strong light. Where the pigment thins out a greenish shade will be seen. When mixed with white it produces greenish-blue tints. When mixed with chrome yellow it produces clear greens.

You may be more familiar with Prussian blue which shows a reddish color when the pigment is thin. Prussian blue in producing red is very similar to Chinese blue which produces the green effects just mentioned.—M. J. W.

AN ALKALI-RESISTING spray finish for washing machine tubs and kindred products is now available in pastel shades. This new finish is applied like lacquer, using a spray gun only. It has the adhesion of an enamel and resists alkaline conditions.

Duco Cement

The story of Duco household cement is told in a booklet just issued by the Industrial Finishes Division of the DuPont Co., at Parlin, N. J., for the purpose of acquainting the public with the wide and varied uses for the product. Its qualities, directions for application, and cautions in its use are set forth in detail. The booklet is printed in colors and contains a number of illustrations.

New Developments in Synthetic Finishes

Many products have taken on a new appearance designed to enhance their values and to catch the buyer's eye. With the rapid development in the last few years of the new synthetics, and the vast improvements in the field of lacquers, these finishes have reached new heights of protective ability. Turning out a beautiful product is no longer the tedious and expensive process it was even a few years ago.

by C. R. BRAGDON and H. B. BOND
of The Ault & Wiborg Varnish Works, Inc.

MANUFACTURERS who finish their products with any kind of enamel or lacquer are always interested in speeding up this finishing operation without increasing cost or cutting quality (mostly the first). The items of slow air-drying or long, high bakes, numerous coats, rubbing and polishing, etc., are of greatest importance in these costs. Materials that take a long time to "set up" are a nuisance because of the care with which they must be handled before being baked. Dust and dirt are very apt to spoil their smoothness, and they require plenty of space to preclude any possibility of their being touched by anyone or anything. This fault is typical of the oil enamels.

As a general rule, in any certain type of material considered, the slower the drying, the better the quality. This is where most of the finishing difficulties arise—in trying to make a product dry too quickly and still conform to ideas of good quality.

Oil enamels can be shortened to speed their drying, and every one knows what happens from this operation. The oils, which are the basis of long wearing quality, are the slow driers, and cutting back on them means that quality is automatically sacrificed. House paint, with its almost straight oil base, is an example for comparison against something like gloss oil. That is a case of extremes, but the rule holds good pretty closely for all proportions—with modifications for different resins which might be incorporated in the varnish used.

Some synthetic resins may be used with oils but they increase the cost considerably and are (at least in their present stage of development) occasionally apt to be rather tricky and troublesome. However, they do dry much quicker in formulas of equal length, durability, etc., and also

give finishes with higher limits for quality. They can be made remarkably resistant to water, acid, alkali, etc., and tend to discolor much less under heat. They have a definite place in the finishing field, meeting certain requirements in full measure.

Characteristics of New Material

Recently there has been developed a type of material which may be considered a synthetic quick-drying lacquer, i. e., a synthetic enamel to which has been imparted many of the good points of lacquer. From its synthetic resin base, it derives most of its qualities, the main change having been made to improve the drying tremendously.

It will air-dry to be dust free in from 5 to 30 minutes, and to handle easily in an hour, hard in four to six hours, presenting a film which is hard, tough and of general excellence. To bring out its best qualities and improve its adhesion it should be baked at the equivalent of 200°F. for about an hour, which completes a polymerization reaction. This low bake makes it ideal for use on wood, as the bake can be cut down to lower heat for a longer time or even eliminated entirely, if necessary.

The finish can be regulated through just as wide limits as in an enamel, from very high gloss to a real flat. The toughness, durability, hardness, length, flexibility and adhesion compare favorably with those qualities in any other type material. In exposure tests, panels with one coat of this material have stood up on a par with lacquer panels of two coats over a primer or ground coat, which is about as severe a comparison as can be made for industrial finishes. It sustains pigmentation as well as a synthetic enamel and is a thorough protection and finish, usually in one coat.

Its ability to stick to bare metal is similar to that shown by oil enamels, and since luster is so easy to obtain, pigmentation can be obtained sufficient to give thorough hiding power in one coat. It can be made practically marproof when the conditions of application are favorable, and when nail-proofness is an important consideration. Because of its peculiar kind of body, it also possesses remarkable ability to "build up" and yet with that ability the "mileage" obtained is almost equal to that from oil enamels. The synthetic base gives it much better flow than lacquer, and gives a smoother finish with less chance of orange peel, etc., and no chance of blushing and the other worries incurred in applying lacquers. Generally, this material is made for spray work, and for reduction to spray body a lacquer type thinner is used.

It has been given a favorable reception in the metal furniture trade where its quick-drying properties make it particularly valuable on such bulky type products. They also especially appreciate its flexibility, and adaptation to one-coat work. Toy and metal specialty manufacturers have also taken to it from the standpoint of its adhesion and hardness without the high bake usually necessary to attain these film characteristics. It undoubtedly has a wide field in industry, as it is formulated to suit varying requirements.

Synthetic Formulation

Since most synthetic resins are like varnishes in the complexity of their formulas, an infinite

variety of resins may be made by varying even slightly the component raw materials and the processes of manufacture. Numerous products, mostly of the phenol-formaldehyde and phthalic anhydride types have been commercially developed to uniformity and are in standard use in varnish and lacquer formulation. Common ester gum has been popular in lacquers to give increased luster, but recent tests have shown it to be particularly susceptible to deterioration by sunlight. In combination with other gums imparting certain specific desirable qualities, however, ester gum has been the basis for some highly successful nitro-cellulose formulas.

The vehicles with which these resins are combined afford still further possibilities of varying their effects. For instance, the results obtained by making up a cooked varnish are entirely different from those shown by incorporation as a cold-cut solution in a pyroxylin base. From this it can be seen that superior resistance to any particular deterioration problem can be built up by using a specific resin; or, by skillful blending and manipulation. The fact remains, however, that nothing has yet been developed to provide the best results for all requirements.

In the foregoing part of this article a product has been described, for which adhesion and covering power have been stressed in particular. Another new development is worthy of careful consideration for superiority in other respects.

Another New Material

The properties imparted to lacquer films formulated in this new way, read almost like sales-promotion literature; based on the fact that the vehicle is water white in color and so chemically inactive as to possess most unusual resistance to acids, alkalis, sulphur dioxide, etc. They are so nearly impervious to greases, stain from inks, blood, fruit juices, medicines, etc., and to moisture and humidity that they approach the ideal for refrigerator finishes. With all of the above powers of resistance, the toughness and flexibility are greatly improved. Likewise, the water-white original color and freedom from drying discoloration make possible the most brilliant whites and colors in the resultant coating, and the luster attained is remarkable.

While possessing such a long list of desirable properties, this new product does not adhere well to bare metal, requiring a prime coat for best results; and it, like the other type of synthetic enamel described, is much improved by baking, or more properly force-drying, at 150°F. for an hour. The user has the choice therefore, between the one-coat type of synthetic lacquer, possessing a good degree of toughness and luster and durability, and the newer type requiring two or three coat work, but of so much superior appearance and resistance that it may be said to have all the good qualities of porcelain enamel without its brittleness.

For manufactured articles which are intended for use under severe conditions which might affect the finish, this product can be used to the greatest advantage. Hospital furniture, butchers' scales, paper labels, food wrappers, display cases and racks, refrigerators, machinery, bicycles, automobiles, etc., are examples of products for which such a finish is ideally suited; and to which new utility, durability and beauty may be given at a reasonable cost.

Automotive Finishing

by J. B. NEALEY
American Gas Association

Emphasizing how modern equipment fits in effectively and economically with body, fender and wheel finishing operations in a Ford assembly plant.

IN THE Ford Motor Co.'s automobile assembly plant at Long Beach, Calif., a feature of the body-painting division is a conveyor that winds back and forth on itself, through spray booths and drying ovens, six times and has a total length of 1870-ft. The principal oven is 437-ft. long and just wide enough for the conveyor to travel the length of it and return (two passes) except for the second portion for drying surfacer which will accommodate another pass of the conveyor and extends somewhat beyond.

At the other end of this oven, and built against it so that the conveyor passes into it without changing direction, is another oven 87½-ft. long. Scattered along this conveyor are eight spray booths for eight different coats, and those coats not dried in these two ovens are air dried.

The conveyor is of the overhead chain-and-hook type, motor driven at a rate of 39-in. per minute, and the bodies are hung on this. The first length of this conveyor is outside and parallel to the large oven and on it the bodies are sanded, washed, wiped, blown off, tack-ragged and the prime coat sprayed on in a booth. It then turns on itself and passes through the oven and returns for drying, the time being 150 minutes and the temperature 225° F.

Passing through two booths in succession the bodies next receive the first coat surfacer and the second coat surfacer which are dried on as the conveyor passes through the enlarged section of the oven. This requires 30 minutes at 250° F. The length of conveyor exposed between the discharge end of this wider section of the oven and the entering end of the 87½-ft. drying oven is used to give the work a water rub, and drying is accomplished at 175° F. in 27 minutes.

The conveyor makes a complete turn at the end of this small oven and returns parallel to the

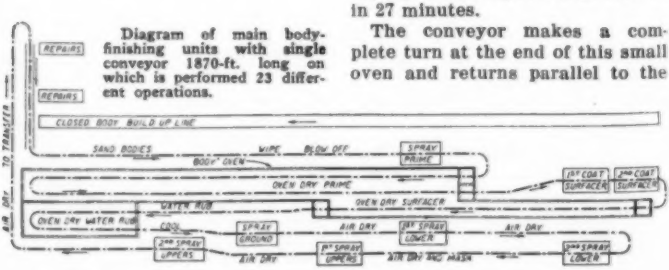


Diagram of main body-finishing units with single conveyor 1870-ft. long on which is performed 23 different operations.

long oven where the bodies are cooled and pass through two spray booths in which they receive the ground coat and the first lower spray respectively. Turning on itself for the sixth pass the bodies go through three booths, receiving progressively the second spray lower, first spray upper and second spray upper, these coats being air dried on the exposed portions of the conveyor in between.

The booths are of glass, open at both ends for the passage of the conveyor and work, and hooded with fans to draw out the fumes. This layout will paint and dry 145 bodies every 8 hours. This oven, as well as the other paint-drying ovens in this division, is heated with steam coils from gas-fired steam boilers.

Finishing Fenders

The fender enamel and oils are delivered at room temperature from the storage vats, by a battery of steam pumps, to their respective places of utilization in the plant. The body lacquers are mixed in steam-driven mixing tanks, from which they are pumped to spray booths.

It requires more than 36,000-ft. of pipe to make these deliveries. Fender enamel and oils of the larger consumption items are stored in six steel tanks with a combined capacity for 148,000 gallons; these are enclosed in a concrete pit.

At the end of the sixth pass the conveyor turns and runs at right angles to its former direction, for 167 ft., and returns to the point of beginning. This added space is used to transfer the bodies onto a series of slat type conveyors where they are trimmed and the solvent is sprayed and dried off, polish is given, etc. When finished they are stored on 14 slat type conveyors, each 110-ft. long, of which half are located on a platform over the others. These conveyors operate at a speed of 75-ft. per minute, and will hold 11 bodies each, or a total of 154. They are held here until discharged onto the final assembly line.

The solvent is dried off in an oven 62-ft. long, at a temperature of 125° F., while the drying period is 14 minutes. These ovens are all built of sheet steel with rock-wool and asbestos insulation. It will be noticed that when two or more ovens are located over the same conveyor, which operates at one speed, the different time periods necessary for drying various coats of paint, are regulated by the lengths of the ovens.

The wheel oven is approximately 60-ft. long and completely encloses a motor-driven conveyor operating at a speed of 8-in. per minute. One end of the oven is open. Wheels are loaded on and removed from the conveyor at this point. Close by are two mechanical units for black-enameling the wheels. The wheels are placed in these, one at a time, where they are automatically lowered for immersion, raised and then rapidly rotated to throw off the surplus enamel. Operators then transfer them to the oven conveyor. It requires 80 minutes for them to make the round trip in the oven, when carried at 375° F. An overhead traveling chain conveyor 660-ft. long, adjacent to the oven is used for cooling. Finally the tires are mounted on the rims and conveyed to the final assembly line. Wheels to be colored are sprayed and sent through one of the other ovens.

The heater, as stated, is located on top of the oven. Enough draft is supplied by the fan driving the

fresh air into the heater to force it past the tubes, where it is heated, and into the oven through ducts. An induced draft fan, located on top and at the opposite end of the oven, draws the hot air through the oven and vents it through stacks. A hood partially covers the end of the oven where the operators load and unload, and another induced-draft fan pulls up and vents what heat might otherwise escape through the opening. —*Automotive Industries.*

Finishing Veneered Stock

In the finishing of certain types of veneered furniture the finisher from time to time comes up against various problems that defeat his efforts to obtain a satisfactory finish on his final product. Some of these difficulties are particularly annoying because they develop from some simple cause and pass unnoticed in the raw stock, showing up in the final finished product.

One such cause is the presence of glue in the pores of the veneer. This condition is common in open grained woods. It is found where some of the grain pores are either directly vertical, or diagonal to the surface. These pores strike through the veneer in spots, acting as tubes through which the glue is forced when the veneer is pressed onto the core. If these "tubes" are examined under a magnifying glass it will be observed that the glue has completely filled the pores, so that there is no room for the filler. Consequently, these pores are not filled when the work passes along the finishing line. Then when the finishing system is completed, a minute gray spot shows up at these pores.

To correct this condition it is necessary for the finisher to give his raw stock a preliminary treatment, which consists of sponging the work well with water and thoroughly wiping it off. This dissolves the glue and removes it from the pores. Sometimes, however, a second treatment is necessary to obtain perfect results.

After the sponging and wiping are completed, allow the work to dry thoroughly before attempting to start the finishing schedule. This may be done by either force drying in a drykiln or air drying at least overnight—longer if possible. Then the surface should be well sanded to cut down any raised grain caused by the sponging operation. Then stain and proceed with the regular finishing schedule.—H. R. Stewart.

Good lacquers require good raw materials properly formulated.

Hose Connection Wrench Set

A new complete hose connection socket wrench set has been introduced by The DeVilbiss Co., Toledo, Ohio, manufacturers of hose, air compressing and spraying equipment. This outfit includes all the necessary sockets for applying DeVilbiss hose connections to various types of hose. Six different sockets and one wrench are furnished, packaged in a strong metal box. In addition, a chart indicates the proper socket for each type of hose connection.

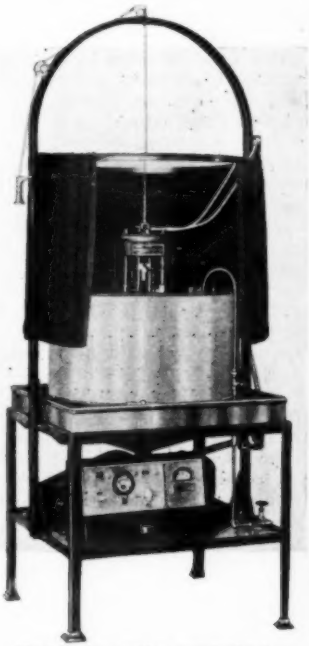
Jas. B. Day Announces Silk Screen Process Color Pastes

James B. Day & Co., 1872 Clybourn Ave., Chicago, announces a full line of silk screen process color pastes, together with accessory liquids. The pastes are manufactured in a full line of standard colors in flat and gloss opaque oil colors, transparent oil colors, opaque and transparent water colors, and lacquer enamels. Mr. D. F. Johnston, specialist in this class of materials, is in charge of the Silk Screen Process Paste Division. A price list will be furnished on request.

Predetermining the Useful Lifetime *of* Finishes

by ***RICHARD S. WAGNER***
Superintendent
Adams & Elting Co.

Comparative tests are especially appreciated by manufacturers who use finishing materials on their products. These concerns are naturally anxious to know how the finish of their products will stand up in service. With the weathering machine it is possible to obtain definite advance information as to which finish will give the longest satisfactory service.



Machine for making standardized weathering tests

OUTDOOR exposure tests were long used in the paint and varnish industry because nothing better was available. These tests were inconclusive and, in many cases, unfair to the product.

The Adams & Elting Co., plant, Chicago, like many of its kind, is located in an industrial district, close to a number of railroad tracks. It is also near a river, from which the smoke of steamboats is added to that of locomotives.

The gaseous, sulphurous, smoke-laden atmosphere makes outdoor testing impracticable, on account of the soiling of the specimens. Roof tests here give a very poor criterion as to how a paint will stand up in actual service in the average residence district. Outdoor tests cannot be reproduced with any degree of accuracy, because the weather in any locality is never twice the same.

At the Adams & Elting Co.'s laboratory an accelerated weathering machine known as the

Weather-Ometer, is used to predetermine weather resistance.

The body of this machine is a vertical metal cylinder, called the weather cabinet, with sample holders on the inside walls. As many as 60 specimens may be tested at the same time.

The violet rays of the June sun are accurately simulated in the Weather-Ometer by a violet carbon arc light, suspended in the center of the cylinder. This type of light has been accepted by the U. S. Bureau of Standards and has been proved to be particularly suitable for weathering tests, because it provides actual service conditions. The violet carbon arc light does not deteriorate nor break as readily as fused quartz and is less costly. The temperature produced in the cylinder by the arc is that of a hot summer day.

Moisture is reproduced in the form of two kinds of rain: the mild rain or spray which is shielded from the light, and a beating rain storm that drenches everything and cools the specimens and the interior of the cabinet to a much lower temperature than before the rain started. This gives the effect on the specimens of the temperature changes encountered in actual service. Freezing exposure can be provided in a separate cabinet, where desired.

All the factors of accelerated weathering are under control of the operator at all times. Any tests made in the Weather-Ometer can be exactly reproduced at any future time, which cannot be done with outside exposure tests.

The accelerated weathering provided by this machine enables tests to be made in a small fraction of the time required for similar results under outdoor exposure. It is difficult to determine a fixed ratio between controlled exposure and outside exposure. Many chemists in the paint and varnish industries use a 1 to 12 ratio, that is, they consider a month in the weathering machine equivalent to a year on the roof. Any such ratio is subject to variations according to the material to be tested and the weather conditions under which the outdoor exposure is made. In all cases, a tremendous amount of time is saved, when advance knowledge of the weather ability of a product is desired.

In this laboratory, the Weather-Ometer has been used for testing paints and varnishes of all kinds, lacquers, enamels, combinations of varnishes and driers, combination of oils and driers, and dry colors. The results of the tests are closely comparable with outdoor exposure or actual service.

The weather resistance of materials and formulas, as well as of finished products are predetermined by means of the machine.

Most of the dry colors used by Adams & Elting Co., are made in their own plant. When bought outside they are tested to see if they are up to standard. Recently a certain shade of lake was bought for outdoor use. It seemed all right as far as observation could determine, yet when tested in the Weather-Ometer the color faded with surprising quickness. It is almost needless to add that the shipment was rejected.

Without the weathering machine test this material would have been accepted and used, as there was no time for a roof test. A large amount of the varnish would have gone out to the trade before the fugitive color was discovered. It is not pleasant to contemplate the number of complaints that would have followed

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Zapon chemists have solved a vexing problem with STOP-OFF ENAMEL #1140. It offers an impervious surface in the plating bath, and is a resistant to acid solutions.

Send for a sample of this new enamel. It is tough, tenacious, and an ideal non-conducting agent for racks and hooks in the chromium bath.

Zapon research costs thousands of dollars yearly. The benefit of our scientific experience is at your disposal without charge. Consult us if you have a lacquer problem.

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in the next few months, or the difficulty and cost of adjusting them.

On comparative tests, with specimens exposed side by side, the testing machine accurately classifies the superior, the average and the inferior. The information thus obtained is of very great value.

Some quite interesting tests have been made here of the weathering ability of coatings as applied to wood, metal, gypsum, masonite, and celotex. For instance, it was found that some composition wall boards absorb moisture; hence, the paint applied to such surfaces must retard the absorption of moisture as far as possible.

The accelerated artificial weathering tests have proved of value in this laboratory in foretelling the life of paints, varnishes and enamels which are used indoors as well as those used outdoors. An inferior paint or varnish will deteriorate and check even when it is not exposed to weather or sunlight. These tests show how the products will look after a year or more in service. Fading and other atmospheric effects are accurately revealed.

In testing paints used on metal surfaces, we can readily determine which paints retard rust most effectively. Some pigments will accelerate rust and some will resist it. By proper use of the light and heavy sprays it is possible to make authentic tests.

The Weather-Ometer has proved a profitable machine to this company in several ways. It has given information which has led to noteworthy improvements in a number of products. It has saved much time as well as money by giving, in a remarkably short time, dependable advance knowledge as to how the company's products will stand years of weathering. It has given our salesmen more confidence in what they sell because they know definitely what it will do in actual service.

Color Popularizes Bathinette

Color is an important factor in creating sales for the new bathinette now being manufactured at the plant of the Blount Lumber Co., at Lacona, N. Y. This is a new product used in bathing and dressing infants; it is being made for the Bathinette Corporation of Rochester, N. Y.

The bathinette is made in two sizes. The stand is about table height and is finished in a variety of colors. It contains a flexible rubber tub over which is placed a movable table for dressing the infant. The stand contains pockets for soap and other accessories; also a towel rack. The entire fixture may be folded and carried easily.

The striking colors of this new product account, in no small way, for its growing popularity, for mothers are quick to associate color with child life. The finish of the bathinette harmonizes with the newest trend towards color in bathroom fixtures where we see striking greens, yellows, lavenders and the popular black-and-green combination, with green tub and black dolphin fixtures.

The directing mind responsible for merchandising the bathinette knew well the value of color appeal; he capitalized on it and right away the product became popular. Color did the job of popularizing the bathinette, just as color will sell more goods for many more manufacturers if they will use it wisely.—A. J. Owen.

... Its final test Lies in

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● Lacquer formulated with Butanol and Butyl Acetate(CSC)produces thoroughly united, smooth, long-lived coats, able to retain their beautiful sheen over remarkably long periods of time. The splendid flow, due to Butanol, means films of just the right tensility, without the danger of shrinking, pinholing, easy chipping. As coat after coat is applied, they are welded into one harmonious, smooth film of excellent adherence. Yet actual finishing costs remain gratifyingly low. To assure greater consumer satisfaction for your product, it will pay you to specify "formulated with Butanol" on your next lacquer order.

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Immediate service from strategically located warehouses

BUTANOL
"It spells Lacquer Safety"

Color and Finish Samples on Paper Panels

"An article about finishing sample plates for salesmen, which is something I have done myself and our salesmen find these plates to be a wonderful thing to carry around to stores to show the colors and wood graining effects we produce in our modernly equipped finishing room."

by GEO. MOSKOS

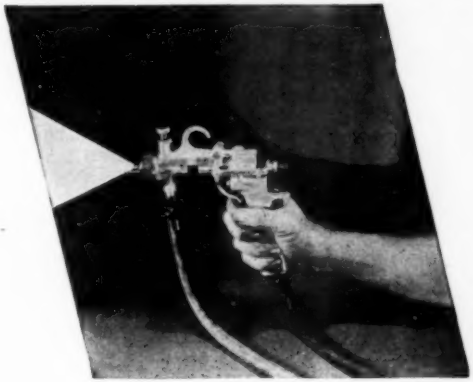
WE HAVE found that our salesmen can use heavy paper panels finished in colors, wood grain, marbleized design, etc., to better advantage than wood or metal panels. These finished panels can be bent to show the flexibility of the finish, or thrown on the floor without being damaged and, being so light in weight, they are more convenient to carry and handle. When not in use these finished panels should be separated by sheets of wax paper to keep them clean and to preserve them in good condition.

The paper we use is photographer's paper—double weight, gloss photo stock.* The face side of this paper presents an excellent surface for finishing. These sheets of paper come in different sizes, but it is more economical to purchase and finish the larger sizes, because after the finishing coats have been applied to the sheets you can cut the paper to any size you desire. For graining effects, it is best to cut the sheets, so that you can position your design or copy or wood effect in such a way that you won't ruin the layout on the panel.

*The stock purchased at retail stores is sensitized on the face side and will turn black on exposure to light—unless it is first treated, or "fixed" as photographers say, in a hypo-sulphite of soda bath. This is an ordinary treatment that any local photographer can perform. Unsensitized photograph paper can be obtained direct from the manufacturer.

For finishing sample paper panels in reproduction of wood grain or marble, we begin by first spraying each panel with a coat of white shellac. Then place all the sheets of paper in a warm oven for about six hours to be sure they will be good and dry. Next, we spray on a suitable ground coat, being sure that the ground coat is not too heavy; otherwise checking or cracking will occur. This finish is dried by placing the panels in an oven heat of 145° to 150° F. for six hours.

Now the panels are ready for the graining process. The graining can be applied by hand or by the plate-and-roll method. When the sheets are done by hand graining I would advise tacking all four corners to hold them steady. Tacking is not necessary when the plate-and-roll process is used. After the graining has been done, place the sheets in an oven for 4



The tougher they are —

It started out to be a gun-killing job.

An electrical manufacturer set up equipment for automatically spraying small parts. The operating cycle required the guns to spray for two seconds and stop for three,—production made it necessary to run the machine 24 hours a day.

One manufacturer's gun could not hold the spray adjustment. Material continually built up around the nozzle of another make, still other guns were constantly pulled out of line for repairs,—production dropped much below the necessary rate.

Three Spraco Model 14-A guns put in the battery on test, delivered a uniform spray, held their adjustment, did not build up, and continued to stay on the job after others failed.

The battery is now completely equipped with Spraco guns, production flows at the rate originally planned and the manufacturer writes that maintenance and repair costs are extremely low.

Put *your* troubles up to Spraco engineers. Twenty years contact with spray problems of every kind plus ample laboratory facilities for making tests under actual operating conditions are at your disposal. Write today, all information will be held in strict confidence.

hours with the temperature at about 150° F. The sheets will then be ready for the varnishing coats. This method requires two coats of high grade furniture varnish. By getting the best quality material, you can use a semi-gloss varnish, and omit rubbing and polishing.

For the final drying the sheets are placed in the oven for a period of 8 hours at about 120° F. after each coat of varnish.

Color Enamel Finish

For applying enamels on the sheets, use white shellac as an undercoat. Then spray two thin coats of synthetic enamel. Place in oven after each coat for 4 hours at a temperature of 140° F. These paper sheets can be finished in oil enamel by placing them in an oven, as stated before, for 5 hours at 150° F.

Now the finished paper plates are ready to cut into various size panels, and can be striped on the edges or decorated with an ornamental decalcomania if one desires it.

Portable Spray Equipment

The introduction of spray equipment in furniture refinishing shops is, I believe, due largely to the improvement of lacquer as a finishing material. Varnish could be applied with a brush, as was the custom formerly, but with lacquer it is almost necessary to use a spray gun for satisfactory results.

Many of the custom finishing shops now use portable spray equipment, for the application of lacquer finishing materials. For the small shop without a drying room, the spray method of applying lacquer, together with the possibility of quicker service to customers, makes this mode of finishing the logical one, in preference to the slower and more expensive method of brushing slower drying materials—sometimes with inferior results. The refinisher must be able to do a neat job in a minimum length of time, and considering the low cost of new furniture, he must be able to refinish the piece at a lower price than formerly.

The final argument for the adoption of advanced methods and materials in custom refinishing shops is the necessity of turning out more work per hour, thus reducing the unit cost and furnishing a finished job equal to the best finish turned out of a modern furniture factory. Lower refinishing costs are almost as necessary as quality workmanship to attract profitable business. The shop using slower antiquated methods cannot compete successfully with shops using the latest methods and the best materials.—C. V. Lee.

Chemical Replaces Rubber

A new chemical product which has practically all the characteristics of rubber but which is not affected by solvents as rubber is, has been arousing wide interest on the part of industrial engineers. The product is an olefin-polysulfide reaction product known as Thiokol—a product of the Thiokol Corp., Yardville, N. J. It has several advantages which make possible important advances in many lines of industry. It has unusual resistance to the deteriorating action of most liquids and gases.

Porcelain Enameling Plant Installation

The Canadian General Electric Co., Ltd., has recently completed the installation of a porcelain enameling plant in their Peterboro, Ont., Canada, factory for the enameling of electric refrigerators. The refrigerators are being manufactured completely in the Peterboro factory. All enameling equipment was made in Canada and was supplied by the Ferro Enameling Co. of Canada, Ltd., Ottawa, Ont., a branch plant of the Ferro Enamel Corp., of Cleveland, Ohio.

Cabinet—Courtesy of Curtis Companies, Inc., Clinton, Iowa

Millions of pieces of Kitchen equipment need Teglac-type lacquers

Kitchen equipment is a market of millions of opportunities for commercial finishers who use Teglac-type lacquers. Teglac lacquers sand well, dry hard and have a high gloss. They cost less to buy and use. They add sales appeal to cabinets, chairs, stools—all wooden equipment.

You can sand Teglac lacquers right down to the grain, then build them up to a beautiful, mirror-like or flatted finish. They will not blush. They will not feel tacky to the touch—even on chair seats. Utility, appearance and durability of lacquers are increased by Teglac.

You should have a demonstration of how the Teglac Lacquer System can aid your sales and cut your production costs. Without obligation we will tell you the complete Teglac story.

Industrial Chemicals Division

American Cyanamid Company

535 Fifth Avenue New York

Selecting Preparing and using

WOOD FILLERS

by C. DAN YOUNGS

TODAY IT IS an acknowledged fact among all manufacturers of good fillers that the only material which will give perfect results in a wood filler is silex, a type of silica that is crystal hard and which, regardless of how it is ground, will retain its jagged rather than round edges. It is these jagged edges which help imbed and anchor the filler in the wood pores so that it cannot easily be displaced by subsequent wiping, sanding or finishing operations—after the filler has dried.

The treatment of silica in the manufacture of the pigments used in wood fillers is very interesting. The quartz is first heated red hot and then plunged into water. After a continuous grinding in water to the required degree of fineness, it is water-floated and dried. It is then screened to separate it according to the varying degrees of fineness. This silex is combined with a binder—usually a refined linseed oil—and the japan which gives it its quick-drying qualities.

As is the case with all classes of finishing material on the market today there are various grades, ranging from the better ones at higher prices down to those selling below what it costs to manufacture good filler. In the cheap fillers it is evident that inferior materials must be substituted for those higher priced ones used in the best fillers.

"The filling operation, if improperly done, will cause more trouble than any other."

Fish oils and other cheaper oils are substituted for pure linseed oil; cheaper rosin driers are used in place of the hard gum driers; and non-crystalline forms of silica take the place of the harder kind. Also, the ingredients may be less thoroughly mixed. The use of these cheaper fillers generally reacts upon the finisher using them for due to the lack of hardness and the cheaper grades of oil and driers, they are likely to cause trouble in the finishing room.

When the filler has reached the finishing room there are many

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things to be carefully observed in its use. First, there is the package. Unless a large amount is to be used within a short time, it is better to put the filler in metal containers rather than in wood, for the oil will soak into the wooden container, therefore allowing the filler to harden in the package before it is used.

It is good practice to mix up only what filler will be required for the day's work, for if the prepared filler is left exposed to the air very long after being reduced, it is apt to become fatty and slow drying.

After the original package of filler has been opened but before reduction takes place, it will harden on top. This top part should not be used for it will not mix readily with the naphtha or turpentine; it will be coarse and gritty. It is well to have an air-tight cover for the filler container, so as to obviate any loss from this source.

Two vehicles are suitable for the reduction of wood filler to a brushing consistency — turpentine and naphtha. Since the cost of pure turpentine makes its use practically prohibitive, naphtha is the most commonly used reducer. But there are various grades of naphtha on the market—all distillates it is true, yet they vary—and care must be taken to select the one most suitable. It must contain no grease, water nor sulphur, as these are harmful.

Filling is a most important part of the industrial finishers education; it is one operation upon which the success or the failure of the whole finishing process depends. A poorly filled piece of wood cannot be evened up by finishes, nor can depressions, pinholes and the skipped grain, caused by poor fillers, be counter-acted by subsequent coats. Remember that in fillers, as in all else, Quality Pays.

The reduction of filler varies in different shops and according to the habit of the workmen. Some prefer to brush it out in a heavy consistency; others prefer a thin mixture, going over it fast and more than once before it sets. The consistency of filler should vary with the different species of wood over which it is applied.

Condition of Wood Surface

The success of any filler is largely if not wholly dependent upon the surface over which it is used. The sanding that wood undergoes before it reaches the finishing department often causes small particles of wood dust to become imbedded in the pores, and frequently these are not apparent to the touch or to the eye. It is important, therefore, that all wood be brushed off both with and against the grain before finishing begins.

Where a stain is applied, especially if it is a water stain, it will raise the grain of the wood and cause small fibers or "whiskers" to stand up which will resist the implanting of the filler particles in the pores of the wood. It is necessary that these wood fibers be removed, but since they are soft and pliant it is essential to stiffen them before sanding. The best method for this is a wash coat of shellac, sufficiently thin that it will not fill the pores and take the place of the filler.

Then again, on veneered sur-

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LACQUER SHADING STAIN

Does not bleed or fade. DRIES INSTANTLY. Made entirely from water colors assuring fastness to light and non-bleeding. A perfect blending and shading medium. May be used either directly over filler or between sealer and lacquer coats.

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#1900 Wateroil Rubbing Oil.

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Produce the Authentic Antique Color used on the finest reproduction Maple Furniture This is the Finish now demanded by Furniture Buyers.
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How to Make New Furniture Look Antique by Imitating Cracks, Burns, Worm Holes, Etc.

THE GILBERT SPRUANCE CO.
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faces, there is grave danger that the glue will come through the pores and fill them to the exclusion of the filler. If this happens, subsequent coats are applied over a glue base rather than on a filler base, and this will cause trouble. It is a good plan to lightly sponge the veneer with warm water before filling, giving it plenty of time to dry afterward, of course.

Another thing is to make sure that the filler is sufficiently dry and hard before wiping. The skilled operator can easily tell this by the appearance of dryness, or the flatness of the surface, but even then there is a danger of its being merely surface dry; if he waits too long, he will have trouble in the wiping.

Filler should always be wiped first across the grain of wood to set the particles, a circular motion being used. After this has been done it can be wiped lightly with the grain, but great care should be used to avoid pulling any filler from the wood pores. Only the finisher's own experience with the type of material he is using can be the standard for the proper time of wiping, as some fillers, containing different types of oils and japans, are slower to set than others.

For Use under Lacquer

Filler for use under a lacquer must have no addition of oil, for lacquer has a natural antipathy to oil. The filler manufacturer knows just what is the right proportion of oil which lacquer will withstand, and any change made will throw the formula out of proportion and cause trouble. It is well to use filler under lacquer in a heavier consistency than under oil, as in the case of varnish or enamels.

It is far better to buy a filler designed for use under lacquer—especially when colored filler is used, for if the color is made on an oil-soluble base it will react upon the lacquer by bleeding, leaving the filler simply a mass of uncolored silica. It is also apt to muddy the finish and cause an unsightly appearance.

There is some difference of opinion regarding the necessity of a shellac coat over filler, some finishers claiming it is not necessary and in fact that the finish is better off without it because of the brittleness of shellac.

On the other hand, some contend that the shellac coat will seal the stain and filler and give another film of protection before the final coats are applied. Personally, I favor shellac if it is properly sanded down, for it not only kills all chances of the filler and stain colors bleeding through, but it will flow into the low spots and give a much more even surface to work over.

Peaches and Cream

You may be surprised how nicely such a color combination as the favorite desert really looks. It was used in a kitchen in an old-fashioned home where dark wood wainscoting was formerly used. The walls and ceiling were enameled a warm cream shade. A line of apple green on the wainscoting as well as on the breakfast table and chairs created a slight contrast that aided in the harmonious "fruit combination."

Incidentally, peach-colored studio curtains made of theatrical gauze matched the lining of the drawers and cupboards, while the floor was of a plain dark green. —O. P. I.

OXX

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AIR DRIES OR BAKES

Here's a sensational new primer—Berry Brothers OXX—that air dries dust-free in five minutes! And in 4 to 6 hours is hard enough to recoat with oil materials! . . . At 225° to 250° Fahrenheit, OXX actually bakes hard enough to resist the lifting action of lacquers in from 20 to 30 minutes! . . . Standard colors: Light Gray, Blue Gray, Brown and White.

If you manufacture metal goods, such as cabinets, furniture, etc., think what this amazing new primer will mean to you in time-saving alone! . . . Write for the facts immediately—we can assure you an agreeable surprise.

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PAINTS - VARNISHES - ENAMELS - LACQUERS

DETROIT, MICHIGAN WALKERVILLE, ONTARIO

Refrigerator Finishing

by G. KLINKENSTEIN

Chief Chemist

Maas & Waldstein Co., Newark, New Jersey

Solving the problem of what to use and how to finish the steel cabinets of modern mechanical refrigerators—where a finish must help sell the public on a new product.

THE extensive development of mechanical refrigeration for domestic use created a demand for the production and finishing of large quantities of refrigerator cabinets. These cabinets had to be highly efficient as well as designed to be adaptable to manufacture by production methods we associate with the automobile industry.

Large scale production methods of manufacture meant the scrapping of the familiar wooden ice box, together with the old type paint and enamel that went with it. The use of steel in place of wood revolutionized finishing methods and materials.

At first thought we had but to turn to the automobile industry for the solution to this finishing problem. However, careful analysis of the requirements in close cooperation with large refrigerator manufacturers showed that a refrigerator finish should have the following properties:

1—Humidity resistant.
2—Butter and grease resistant.
3—Not discolor on aging.
4—Not become brittle on aging.
5—Resist abrasion.
6—Resist impact.
7—Not discolor on exposure to sulphur dioxide.

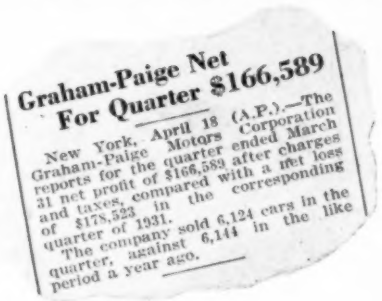
These requirements can be considered and evaluated if desired. However, a decided failure or weakness in any of the above properties should eliminate a finishing material from consideration.

Humidity resistance. This is of very great importance as a cold refrigerator standing in a warm room will sweat on the outside, the same as a glass containing ice water. Particularly in the South, finishes on refrigerators have broken down due to a lack of humidity resistance. These failures became evident by the finish blistering, rusting through from the metal and, in certain cases, peeling off in sheets.

These conditions may be duplicated in the laboratory by providing a humidity cabinet or room where the desired temperatures and humidity can be maintained. In our tests we maintain a temperature of 110° F. and a relative humidity of 100%. The panels under test stand in a vertical position against a metal surface that

Paper presented before the Paint & Varnish Division of the American Chemical Society at New Orleans, March 29.

A PIONEER DARED



Graham-Paige Net For Quarter $166,589

New York, April 18 (A.P.).—The Graham-Paige Motors Corporation reports for the quarter ended March 31 net profit of $166,589 after charges and taxes, compared with a net loss of $178,523 in the corresponding quarter of 1931.

The company sold 6,124 cars in the quarter, against 6,144 in the like period a year ago.

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is cooled by running water. Water condenses on the surface of the panels. The panels remain in the humidity room for 36 hours, after which they are taken out and allowed to dry in a cabinet at a temperature of 85° to 90° F. This cycle is repeated until the panels under test show a breakdown.

Butter and grease resistance of the finish ranks next in importance. Butter, lard and the various vegetable oils that are used in the kitchen may be left on the surface during ordinary usage. If the finish is not resistant it will be softened and partially or completely removed when the surface is cleaned or wiped. The butter and grease resistance may be determined in the laboratory by applying to sections on a test panel, melted sweet butter, Wesson oil, and a 50/50 mixture of oleic acid and lard. After two weeks contact, the finish on the panel should not be permanently affected when the grease is wiped off.

Discoloration or brittleness on aging. It is quite obvious that if the finish on a refrigerator cabinet becomes discolored or brittle on aging, it will prove unsatisfactory in the field. To check these characteristics we compare a panel that has been heated for seven days in an oven at 130° to 135° F. with an unheated panel. The color change can be noted and the panel tested for flexibility of finish.* The finish should not crack nor flake when the panel is bent 180° around a 3/8-in. mandrel.

Resistance to abrasion and impact will determine the appearance of the refrigerator cabinet that has been in service any length of time. The finish must stand the scrapes and bumps that it will get in ordinary usage. If the finish is too soft it will mar and wear off too rapidly, detracting from its appearance. If too hard it will flake off under impact and also prove unsatisfactory.†

Discoloration on exposure to sulphur dioxide. This is most commonly used as a refrigerant. Leaks may develop in transit or otherwise. The finish should resist the vapors of sulphur dioxide without discoloring. This may be determined in the laboratory by exposing finished panels to the vapors of sulphur dioxide for eight hours at room temperature.

In view of the above requirements various finishing systems and materials were considered.

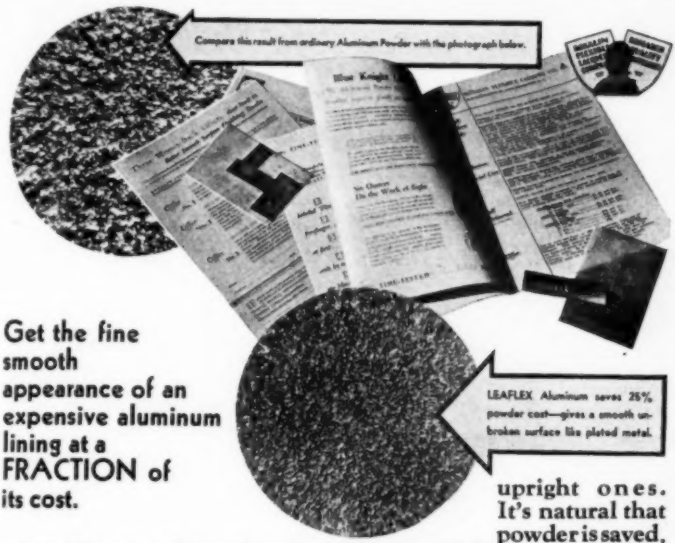
Air-drying oil primers and air-drying oil enamels could not be used as they took too long to dry and did not have sufficient resistance to abrasion and marring. The newer synthetic air-drying primers and enamels also dry too slowly for large scale production.

Baking undercoats and enamels both of the older types and the newer synthetic materials could not be considered on account of the oven capacity involved. Other objections to the baking primers and enamels were the lack of uniformity of color and the discoloration on aging.

Pyroxylin primers and pyroxylin enamels when used by ordinary production methods did not have sufficient adhesion unless the surface was sandblasted. The complete pyroxylin system also lacked humidity resistance. However, lacquer enamels had the desired characteristics of rapid drying,

* Schuh: "The Evaluation of Industrial Finishes." Ind. Eng. Chem. 22, 1346-1352 (1931).

† Apparatus for measuring the resistance to abrasion and impact are described by Gardner in "Physical and Chemical Examination of Paints, Varnishes and Colours" (Fourth Edition) and by A. E. Schuh, "The Evaluation of Industrial Finishes." Ind. Eng. Chem. 23, 1346-1352 (1931).


Compare this result from ordinary Aluminum Powder with the photograph below.
LEAFLEX Aluminum saves 25% powder cost—gives a smooth unbroken surface like plated metal.

Get the fine smooth appearance of an expensive aluminum lining at a FRACTION of its cost.

We discovered that the particles in accepted Aluminum Powder finishes were very "upstanding." It occurred to us that if we could make them lie down, we'd be doing something . . . . so we did.

Examine the difference in character of the 80-power micro-photographs. In the upper one, the particles behave like hair on an angry dog's neck. In the lower picture you have a parallel of the well-known truth that fallen trees cover more ground than upright ones. It's natural that powder is saved. To be definite, 6 ounces of Leaflex do a better job (*to the gallon*) than 8 ounces of even your present material. And we'd like to prove it for you.

WRITE FOR FREE COPY

A letterhead request will bring you, without cost or obligation, a very informative report on Blue Knight Leaflex (*and two other representative Roxalin Products*). You will be invited to bend a strip-sample around ½" pipe as one way of demonstrating Flexibility and Adhesion. You will be told of a special test Kit that will cost you exactly $1.75 to get—money back if it doesn't open your eyes. You will see how Blue Knight LEAFLEX finishes come through an embossing test. This report deserves fifteen minutes of your reading time. Write for it while the matter is fresh in your mind.

ROXALIN FLEXIBLE LACQUER COMPANY, Inc.

40 THIRTY-SIXTH ST., LONG ISLAND CITY, N.Y.

Service to Mid-West from Chicago Stock

JUNE: for blushing brides (*very pretty*); for blushing lacquers (*not so pretty*). Ask for the Research Report on "Non-blushing Lacquers at No Extra Cost."

resistance to abrasion and color retention on aging.

Baking oil primers have been made that are highly resistant to humidity. The logical finish for the steel refrigerator cabinet is a combination of the best properties of a baking primer with those of a lacquer surface coating.

Up to the present time, the best results are obtained by the application of a spray coat of white high-heat baking primer, that is resistant to lacquer when baked for 1 to 1½ hours at 300° F., followed by two spray coats of a white lacquer specially developed to meet the requirements outlined above.

Letters

(Continued from page 6)

ish on porcelain jars which are to contain beauty preparations.

They have been bringing up these jars with different pastel tones of lacquer but the party wishes something novel which has fairly good gloss. The operation must not have too many coats as the work has to be done fairly reasonable.—R. E. P.

What's Smudge Finish?

We have a request from our Pacific Coast office for a new finish coming out on furniture, which is called "Smudge Finish." They state that the finish is emanating from the middle west. I would like to get some details regarding it, if I could, as soon as possible.—M. V. C.

Finish Sells Product

A well known Chicago firm asked me this question: "Why is it that one concern can manufacture cheap case goods, well designed and finished, and sell practically as fast as they can manufacture, while another firm manufactures a good grade of furniture, puts on a fair finish and still can't sell the goods even at reduced prices?"

Not getting too personal but, Mr. Manufacturer, why did you choose your wife in place of one of the hundreds or thousands of other young ladies equally as good looking, or possibly better looking, which you saw before marriage? This question is very easily answered with one word—appeal. She appealed to you; she fascinated you. That certain word "appeal" applies also to furniture.

Make your furniture so that it appeals and fascinates. If you must cut in manufacturing costs, don't cut in the finishing or designing, as 70% of the housewives, whom you have to depend upon for sales, know nothing of construction. Of course, substantial construction is important too, and so are quality woods. But if your products are pleasing to the eye and have a smooth finish it helps sell your goods. You have probably noticed people of both sexes window shopping. What stores do they enter? Almost always the store where they see something that appeals to them, and if they possibly can afford it, they will buy what satisfies their fancy. Remember to make your finish as smooth and appealing as possible.

Do not forsake your rubbing operation and let your furniture go out on a flat lacquer or flat varnish finish, and think you are getting away with something. In choosing her furniture, about the first thing the modern housewife does, after she finds what appeals to her, is to rub her hand over it and see how smooth it is. If it is smooth you will always hear her remark about it, and the sale is made. If it isn't smooth you have lost another sale.

Don't forget that a little color decoration or perhaps some sensible highlighting added on your furniture gives it that individual touch of character and artistic workmanship which helps to make sales, and removes it from the class of the production line. Try it and see.—R. F. DANIELS.

E. H. Seelbach to Represent Despatch Oven Co.

The Despatch Oven Co., 622 Ninth St., S. E., Minneapolis, Minn., announces the appointment of Mr. Earl H. Seelbach, 381 Ellicott Sq., Buffalo, N. Y., as District Engineer. Mr. Seelbach will have charge of the engineering and sales of Despatch industrial ovens; also Despatch paint straining and finish conditioning equipment and heat treating ovens including material handling systems of all kinds. Mr. Seelbach's territory consists of the western section of New York State bounded by and including Rochester, N. Y., and Erie, Pa.

IMPERVIOUS

LACQUERS, VARNISHES and ENAMELS

FOR INDUSTRIAL USE

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SUPERIOR GALVANNEALED and **SUPERIOR SUPER-METAL** Steel Sheets are soft and ductile. They are easy to work with and withstand severe forming operations without fracture or injury to the coating. The spelter (zinc) is *fused* to the base metal by a *Patented Heat Treating Process*. They are far superior to ordinary galvanized sheets.

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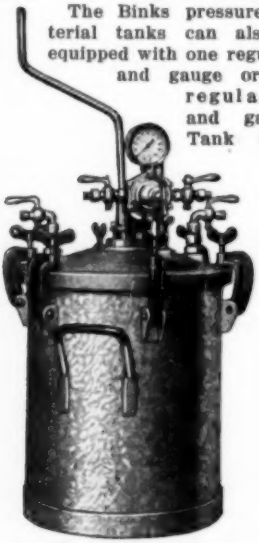
- 1. Has an etched or matlike surface.
- 2. Coating will not chip, flake or peel.
- 3. Withstands severe forming operations.
- 4. Takes paint, lacquer or enamel finishes without preparatory treatment.

Superior "Super-Metal" PATENTED PROCESS

New Materials and Equipment

Pressure Material Tanks

The Binks Mfg. Co., 3114 Carroll Ave., Chicago, announces a line of new pressure material tanks which are very simple in design, having very few working parts. All tanks except the two gallon size are equipped with hand agitators, and, if desired, air or electric motor drive units can be supplied with the tank. These units can be detached very easily and moved from one tank to another.



The Binks pressure material tanks can also be equipped with one regulator and gauge or two regulators and gauges. Tank shells are constructed of seamless drawn steel, heavily galvanized inside and out. The 30-gal. and 60-gal. tank heads are constructed of pressed steel; the smaller tank heads are constructed of semi-steel.

All tanks are equipped with "C" type clamps, allowing the tank heads to be removed very quickly.

Industrial Tape Dispenser

Johnson & Johnson, Brunswick, N. J., is introducing to the trade the Johnson Tape Dispenser which has been especially designed to speed masking tape applications by promoting efficient handling.

Johnson's tape dispenser has been designed to carry a full length roll of tape up to 1¼-in. wide, which can be instantly inserted. There is nothing to adjust, no parts to get out of order nor require attention. The cutting knife, when dulled, can be replaced with little effort.

The simplicity, sturdiness and compactness of this dispenser, the readiness of tape when needed, and the ease with which tape may be quickly cut to desired lengths

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That's the way car finishers are figuring today. Save valuable minutes and hours daily with

JONFLEX
Precision-Edge Masking Tape

Try a roll with our compliments, and ask your shop men what they think of this Masking Tape.

and get a better looking job at a lower unit cost.

Jonflex Precision-Edge Masking Tape is adaptable to any task. It bends and flexes into any pattern, and is a positive resistant of lacquers and solvents. It leaves a clean, sharp edge when removed.

Johnson & Johnson
NEW BRUNSWICK, N. J., U.S.A.

CHROME RACK ENAMEL

When plating with chromium, how do you insulate and protect your Racks to prevent metal deposit?

Chrome Rack Enamel is another specially designed M & W product made for a particular purpose.

It is very easy to apply, dries quickly, and is widely and successfully used. It is not an experiment.

You are invited to write our nearest office for further information.

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"Standard of Quality"

Made by Our Patented Process

A beautiful Pearl finish offers an irresistible sales appeal.

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PAISPEARL PRODUCTS, INC.
65 Nassau St. New York, N. Y.

Prompt deliveries on any quantity

Save the Cost of One Coat of Lacquer with Alaka Glossy White Enamel No. 397

Three years ago, a manufacturer* was giving his cabinets two coats of lacquer — a flat white and a glossy. Then competition forced him to consider pennies. He called us in and said: "Mix me a one-coat job that will do the work of two coats and save me the cost of the extra coat." We produced Alaka Glossy White Enamel No. 397. We said one coat of it would give his cabinets a tougher finish the same high gloss and almost the same coverage. It did. He's been using it three years now.

Makers of refrigerators, slot machines, switch plates, metal furniture, lighting fixtures, bathroom and kitchen fixtures . . . Attention! For a tough, adhesive, one-coat enamel that covers like ordinary flat white, gives a high porcelain-like gloss and withstands the hardest use — send us your product and we'll save you money.

**Name on request.*

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Makers of ALAKA Lacquer

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214-224 40TH ST.
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are features especially appealing to the practical worker.

Three New Materials

The Paint & Varnish Division of E. I. Du Pont de Nemours & Co. announces three new products just developed in its paint laboratories. These are:

Dulux Architectural White Enamels, made with a synthetic base and having certain characteristics not found in oil enamels, such as, quick drying, resistance to yellowing, easy brushing, unusual spreading and no surface tack.

No. 76 Dull Varnish, self-smoothing material which can be used on floors as well as for interior trim. . . . Dries quicker and harder than previous flat varnishes and mars less, thus giving it special characteristics suitable for floor use.

Du Pont Flexofilm Black, a product aimed to develop resistance to acid and alkaline conditions and to provide exceptional service in the protection of metal, wood, concrete, brick or stone surfaces where such conditions prevail.

Alcohol and Heat Resistant Lacquer

A recent announcement by the Lacquer & Chemical Co., of 214 Fortieth St., Brooklyn, N. Y. refers to their wood lacquer No. 30 which is said to combine beauty with unusual durability. It has been used on surgeons' tables and according to the manufacturer, has successfully withstood alcohol, boiling water and hot instruments.

Clean spraying equipment means easier work, less trouble and better finishing.

Sharpe Spray Machines

Keep pace with changing times and conditions. In these days of depression money talks. The Sharpe Portable Spray Machines make it possible to do a satisfactory Spray Job with a ¼ H. P. Outfit.

They lower the amount of investment necessary to spend on a Spray Machine.

They cut your power costs. You will be surprised at the wonderful spray work that can be done with this small Machine.

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Four years of careful and intensive research have gone into our perfected system of lacquer finishes for Presdwood and Celotex.

These extraordinarily adaptable surfaces are becoming more and more widely used in industry. Their finishing presents certain definite problems - we have the answer.

Makers of tile, cabinets, boats, toys, refrigerators and any other industrial production utilizing these boards, will find it profitable to consult us.

Write for our new descriptive bulletin

THE VARNISH PRODUCTS CO.

CLEVELAND, OHIO

Questions and Answers

Matching Birch and Walnut

I should like to learn the best method of matching birch and black walnut. We are making tables with black walnut tops and birch bases. Our trouble seems to be in getting a uniform finish over the entire table.—A. E. F.

In my experience I have found the following schedule gives excellent results when staining birch to match black walnut.

First, tone the birch with a permanent non-grain raising stain, spraying the stain on until the birch is the natural color of black walnut, at the same time blending in any sap streaks in the walnut with the same stain. Let dry for one hour.

Next, coat the entire table with a combination stain and filler of the desired color. Let set 10 to 20 minutes, depending upon the weather conditions and wipe off excess material. Let dry four hours, or overnight for best results. I believe you will find this will produce a uniform shade, fast to light and a perfect foundation for finishing coats.—A. B. LABORATORIES.

If a birch board that is too light in color accidentally gets into a piece of furniture, stain this first to match the balance of the wood before staining the whole surface. If the wood is too dark, then it is advisable to use a bleach before staining.

To stain birch to match black walnut, I suggest using walnut crystals and black nigrosine solvent in water, adding just enough of the black nigrosine to the walnut crystals for the desired color. To get the color exact, take two or three small panels of birch and walnut, fill the walnut with black walnut filler, and stain the birch panels, starting with a darker stain and gradually making each panel lighter. *Be sure to mark the stain formula on the back of each panel.* Finish these panels and then pick out the one which is the nearest match to the walnut. Use the formula on the back of that panel to stain the birch. If the stain fails to penetrate, add 1½-oz. of acetic acid, or the same amount of table vinegar, to one quart of water stain. This will increase penetration of the stain.

Birch is a close grained wood and does not require filling. As a matter of fact, filler clouds the finish on birch.

If the birch is too dark in color, a good bleach to use is oxalic acid. A strong solution is made by dissolving ¼-lb. of oxalic acid in

one gallon of hot water. (Hot water makes the bleach more effective.) If the first coat does not bleach satisfactorily, put on a second application. Wash off with water and vinegar to neutralize any alkaline left and to make the surface safe for finishing coats to be applied.—T. R. NALL.

I have found a good method for matching walnut and birch is first to fill the walnut with a filler colored to produce the shade desired, and then stain the birch with a water stain blended to match the walnut as nearly as possible. A little experimenting, however, will be required to do this satisfactorily. If the stain does not produce the exact tone as the walnut, apply a thin coat of orange shellac.—G. A. A.

Quite often it has been a problem to secure a uniform job of staining where birch and walnut are combined in the same article of furniture or fixtures. As water stains are generally used, it will be found expedient to make two mixtures of stain—one of the proper color and tone for the walnut, and one of double strength for birch.

In wiping the stain on the birch part, it should be lightly wiped to the shade required; sometimes it is advisable to use a soft-haired painter's duster and brush the birch surface lightly to blend the stain evenly.

After the article is ready to receive finishing coats, it can if necessary be shaded further at the spray booth with a shading stain, using any good shading stain.—E. C. H. R.

Nail Hole Filler

Kindly send me information as to where I can get a material to

Here's
The Thinner to Use

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Spraying or Brushing

WORKS equally well with Paint, Varnish, or Enamel. Its high solvency prevents separating, jelling or thickening. Because of its adaptability, you need carry only one thinner in stock. Sunoco Spirits dries evenly and completely—leaves no greasy residue.

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A detailed study of modern methods of automobile painting; carefully written in non-technical terms. This book contains much useful information, both for the shop owner and finisher; explaining methods of preventing checking and cracking, water spotting, peeling, chipping, flaking and many other helpful ideas.

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802 Wulsin Bldg., Indianapolis, Ind.

use for filling nail holes—something that will dry in about one or two hours, sand easily and take stain or filler the same as wood, so that the nail holes or putty spots will not show after varnishing.—M.J.K.

One of the finish manufacturers advertising in INDUSTRIAL FINISHING magazine, offers an excellent crack filler powder for use in filling nail holes. This material is made in the natural mahogany and walnut colors, and mixes easily with water to make a paste of the proper consistency for use. It dries in a few minutes and is thoroughly hard in an hour.

When these crack fillers are applied in the finishing room, they may be mixed and colored with acid stain in the right proportions to make an easily workable paste. This crack filler can be stained over and will not show through—due to the fact that the stain is absorbed by the filler. Thus, either water, penetrating or spirit stains may be used over the crack filler, for all of them will be absorbed by the filler or penetrate into it.—I.F.

Burl Walnut Shading

We are finishing bedroom furniture in sap burl walnut that contains reddish streaks, and we are having trouble getting the finish uniform, even though we use thin walnut water stain and touch up the sap places while the stain is still damp. Then we give the surface a thin wash coat of shellac, sand it smooth when dry and fill with light brown filler. We cannot seem to get away from the burl shading. One way you look at the finished piece of furniture the top drawer front is dark and the bottom drawer front is light; from the other side the top drawer is light and the bottom drawer is dark. Is there any way that this sap burl can be finished in order to relieve this difficulty and still have a light golden color in the burl? I am bleaching all sap surfaces—that is, where it is needed. —F.G.W.

To prevent burl shading is quite a problem, and so far as I know it cannot be done successfully if you expect it to still retain its light golden color. I would not advise you to even try to match these drawers, as this peculiar shading is characteristic of this type of veneer. The cause of the finished veneer showing dark when viewed from one angle, and light when viewed from another angle, is the way the veneer is laid.

We are using burl walnut on a very high grade of bedroom furniture and do not try to match the burl fronts; we think this peculiarity in its appearance adds to the novel attractiveness.

The streaking or unevenness in color is caused by your bleaching process. I do not recommend bleaching except as a means of removing some unnatural discoloration in the veneer; then every precaution should be used to remove the bleaching acids, which may prove destructive to the finish.—G. A. ANDERSON.

Comparative Tests Showing

1. Air consumption.
2. Weight of compressed air on surface.
3. Waste of material.
3a. Comparative waste of material.
4. Penetration and adhesion.

Available in data folder H D-6270 to manufacturers interested in efficient spraygun operation.

Eclipse Airbrush Co.
Newark, N. J.

Instead of using shellac on sap burl walnut, I suggest you use an oxalic acid bleach which will kill the reddish streaks (¼-lb. of oxalic acid mixed in one gallon of hot water). Let dry and then wash the surface with vinegar and water to neutralize any alkaline left on the surface and to make it safe for finishing coats to be applied.

Before staining, apply a brush coat of linseed oil and turpentine, made up in the proportion of one pint of raw linseed oil to one quart of turpentine. Let dry about ten hours and then stain with a water stain, adding a small amount of alcohol for penetration.

Place the drawers in the cabinets and stand back about 10-ft. and look at the drawer from all angles; stain the light and dark places as they catch the eye.

To maintain the golden color on the sap burl walnut, add a small amount of picric acid to each batch of stain made up.—T. R. NALL.

If the red streaks in the sap burl walnut are still stubborn after having been treated with an oxalic acid bleach and washed with vinegar to neutralize the acid, apply, over the red streaks, a coat of green stain of sufficient strength to kill the red, but not enough to show any green when finished. As long as veneers are laid-up to matched patterns, we will have this problem, light and dark sections of veneer facing us as we look into the grain from one angle, and the reverse of the grain from another.

I have always found it to be a safe procedure to equalize and tone from a front perspective, and not to regard appearance from a side view. If one were to equalize from a right side position, the front and the left would be as equally out of balance as it was before.—EDW. C. H. ROTTMANN.

Varnish; Lacquer; Rubbing

A question often put to me is: "What is doing in the wood finishing line?" Wood finishing is a trade in itself; it is something that you cannot cheat on without getting punished by loss of sales—eventually. In other words, you may fool your buyers part of the time, but surely not all of the time. In finishing, it is either a cheap finish or a good finish. There is no intermediate.

The question of whether lacquer is better than varnish, or varnish better than lacquer, is for science

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to decide; which to use may depend to some extent upon climatic conditions. Some manufacturers claim that lacquer is tougher than varnish; others claim there is nothing better than a good old varnish finish. In my travels I have noticed that a number of manufacturers are going back to the use of varnish finish, but they are now using a quick drying varnish, and rubbing with rubbing oil and pumice stone in place of water and pumice stone. It is true that it costs more to rub a varnished piece than it does a lacquered piece but in the long run, where production time is no great object, the varnish finish has proved to be superior and cheaper to produce than a rubbed lacquer finish.

Mr. Manufacturer did you ever stop to compare the volatile contents of lacquer with the volatile contents of varnish? Did you ever notice the amount of lacquer wasted by your sprayer while spraying lacquer? A good test is to let him spray one gallon of varnish and see how many pieces that will cover, then let him spray one gallon of lacquer and see how many pieces it will cover. I believe you will find a difference of about 30% in favor of varnish.—R. F. DANIELS.

Obsolescence may arise because of changes in the product of competitors.

Automatic Air Separator Catalog

The Leavitt Machine Co., Orange, Mass., has ready for distribution its new 15-page, 8½ x 11-in., illustrated, descriptive catalog on its Swendeman Automatic Separator which is an automatic device that eliminates oil and water from compressed air lines. In addition to the descriptive and informative data revealed on the separator, there is also included in this catalog an illustrated write-up that gives "Suggestions for Separators and Proper Installation."

Industrial Finishing MAGAZINE

Issued fifteenth of each month. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

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Desires position: several years' experience on high grade store, office and bank fixtures, antique and novelty furniture. Understands modern methods and production, matching colors and finishes. Can handle any number of men. Go anywhere. Address IF-421, care Industrial Finishing.

INDUSTRIAL FINISHING SALESMAN

Would like to connect with some company who will match competitors' samples with full cooperation of customers and myself. I have some business in New York state with very good prospects for a large volume of baking finishes. Terms: strictly commission, no drawing account, no side lines. Have very good references. Address IF-431, care Industrial Finishing Magazine.